

General Notes:

Designation:
Bottomless culvert as shown on Sheet 1.

Quantities:
Quantities do not include splices in longitudinal bars, nor concrete or reinforcement for parapets, or paving notches.

Reinforcement placement:
Main reinforcement is to be placed transverse or, for curved culverts, radial. When radial, reinforcing spacing of the "a" & "b" bars is measured along the centerline. Stagger splices not shown. Hooks may be rotated or tilted, as necessary, for clearance.

Provide paving notch when top is exposed and when pavement is portland cement concrete, and adjust quantities.

For design and details not shown, see Standard Plans D82 and D84.

For wingwalls refer to detail on Sheet 4.

Allowable skew angle to roadway is ≤ 20 degrees.
For larger skew angles, see Sheet 4.

Construction Notes:

Construction loads:
Strutting required as shown on Standard Plan D88.
Strutting may be required on culvert extensions when existing parapet is removed.

Roof and Walls:
When cover is less than span length-
Place $\frac{1}{2}$ " pre molded expansion joint filler at 30'-0" \pm centers outside the paved roadway lanes and place Bridge Detail 3-2, Standard Plan B0-3, at 30'-0" centers under paved roadway lanes.

When cover is more than span length-
Place $\frac{1}{2}$ " premolded expansion joint filler at 30'-0" \pm centers and additional $\frac{1}{2}$ " premolded expansion joints at locations of change in foundation character as directed by the engineer.

Construction joints:
Temporary joints may be permitted if normal (or radial) to ϕ of frame. Otherwise, the contractor is to submit a proposal for consideration.

Earthwork: See Sheet 1

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED ENGINEER - CIVIL

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER

No. _____

Exp. _____

CIVIL

STATE OF CALIFORNIA

Backfill:
See Standard Specifications, except that the difference in level of backfill (against outside walls) shall not exceed 2'-0".

The Contractor shall verify all controlling field dimensions before ordering or fabrication of any material.

No Wall joints may be used for extensions to increase stem height i.e., monolithic pour required for walls.

For construction loads refer to Standard Plan D88.

DESIGN NOTES:

1. Specifications:
Bridge Design Specifications LFD Version April 2000 (1996 AASHTO Specifications, 16th Edition, with interims through 1998, with revisions by Caltrans)

-Load Factors:
 $1.5 D + 1.5 E + 2.5 (L + I)$ Where D = Dead Load
E = Earth Load
L = Live Load
I = Impact

Capacity reduction factor is included

Loading:

-Live Load:
HS20-44 truck
Apply impact only to the roof slab.
No surcharge on walls due to live load.

-Earth Load:
Earth pressures for two conditions:
140 LB/CF vertical, 42 LB/CF horizontal.
140 LB/CF vertical, 140 LB/CF horizontal.

-Unit stresses:
 $f'c = 3600$ psi
 $fy = 60,000$ psi

-Shear:
Maximm allowable shear, $V_C = 3\sqrt{f'c}$, psi

Special reinforcement coverage:
Plans are not to be used for bottomless culverts in a corrosive environment or where there is a severe scour condition or in freeze-thaw locations.
Where culverts are exposed to action of salt water, thickness of concrete shall be increased to provide 4" coverage between steel and exposed surfaces.

2. Piles:
CIDH pile: see B2-3 STD PLAN, 24" Dia
Concrete $f'c = 4000$ psi, rebar $f'y = 60,000$ psi
Pipe pile: See B2-8 Alt. "W"
ASTM A106 Grade B $f'y = 35,000$ psi

3. Soil Report required for installation of CIDH Piles or pipe piles. Wall Footings must comply to Soil Report recommendation.

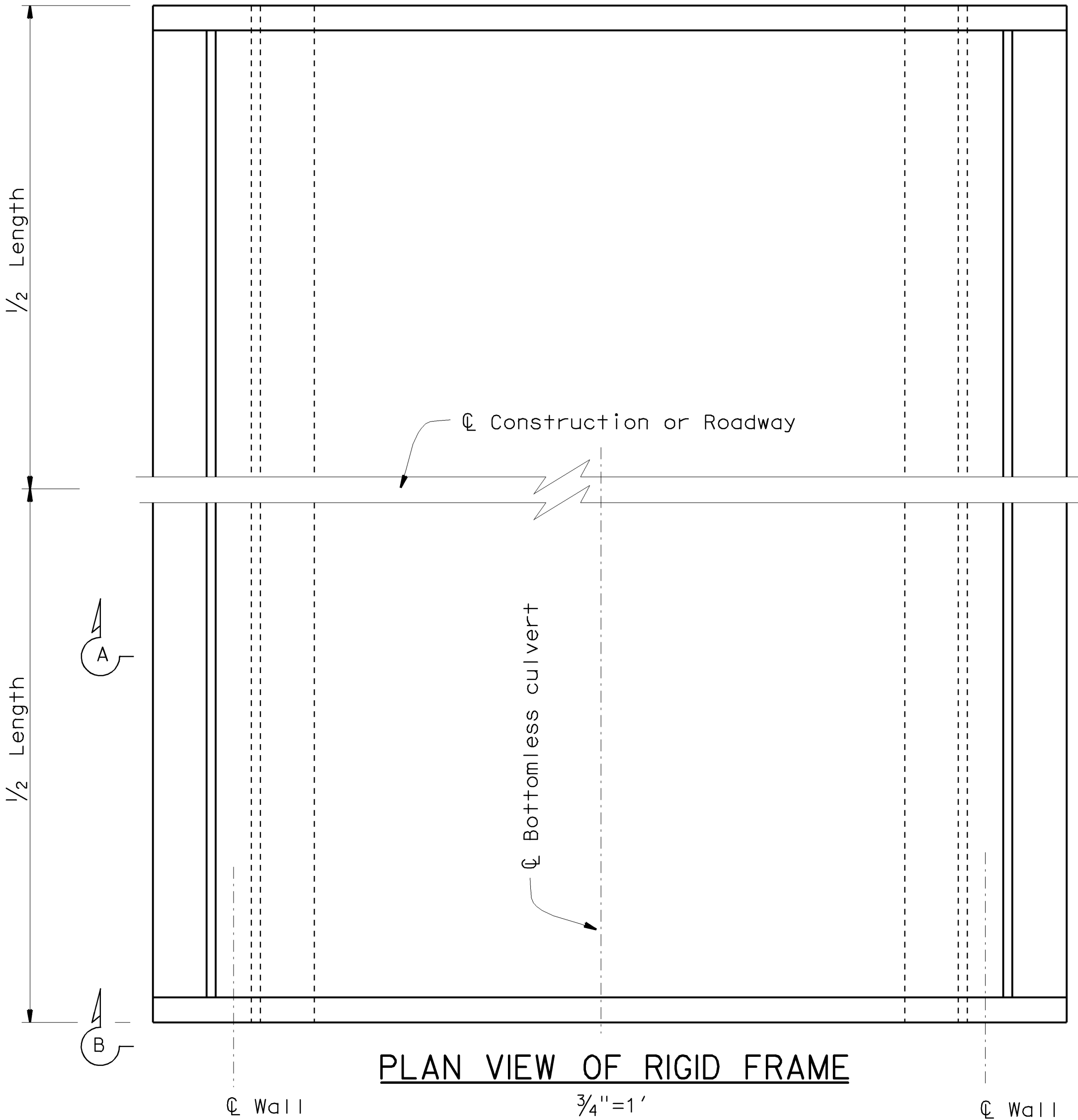
4. Refer to Geotech Report and Soil Report Log of Test Borings for foundation recommendations.

5. Before construction refer to input from Hydraulics and hydrology studies for scour recommendations, drainage area and existing and proposed waterway openings.

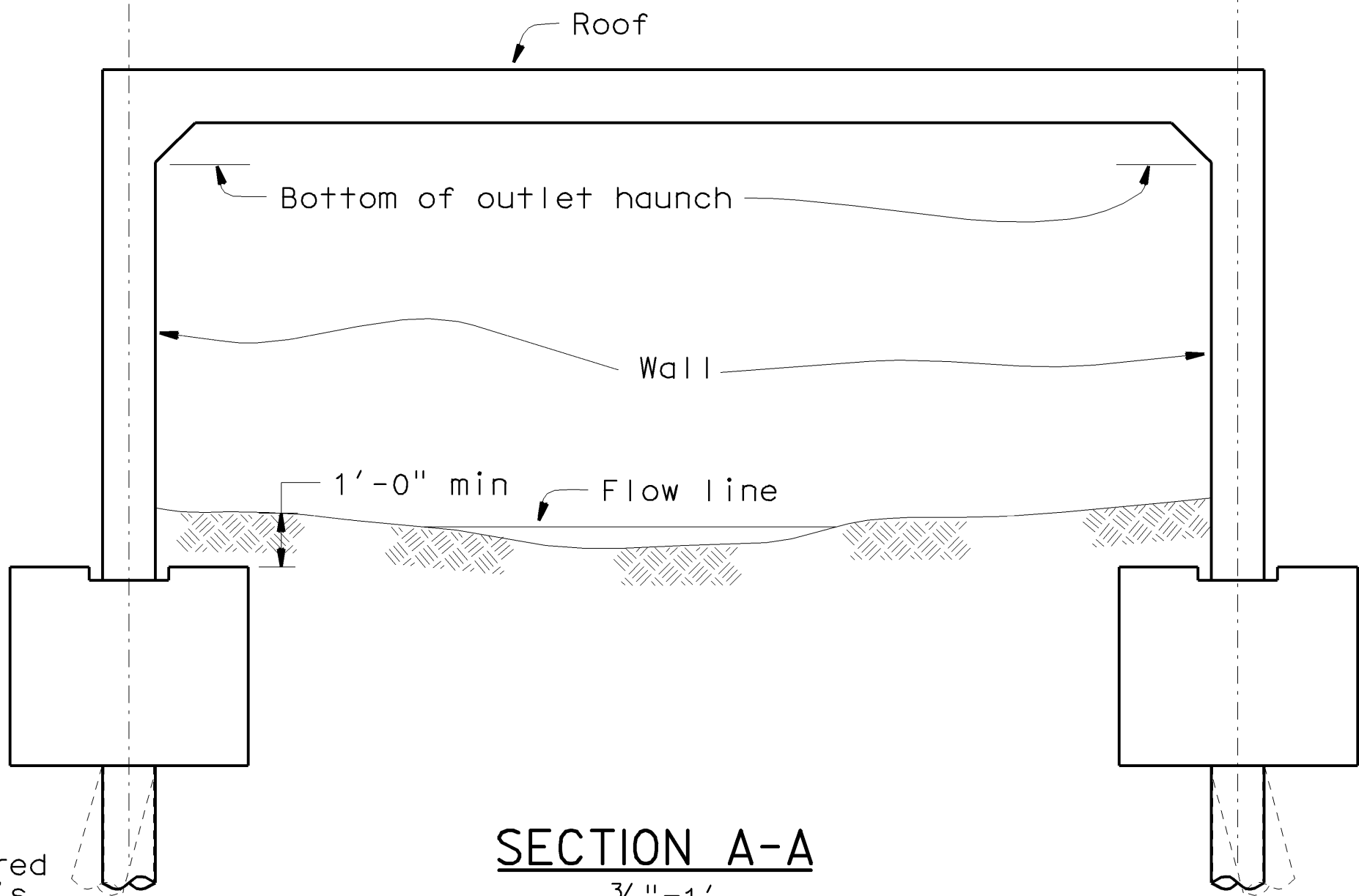
6. Preferred longitudinal gradient is ≤ 3 degrees. For increased gradient, see Hydraulics and Geotech Reports.

7. Maximum hydraulic design discharge not to exceed elevation at bottom of outlet haunch.

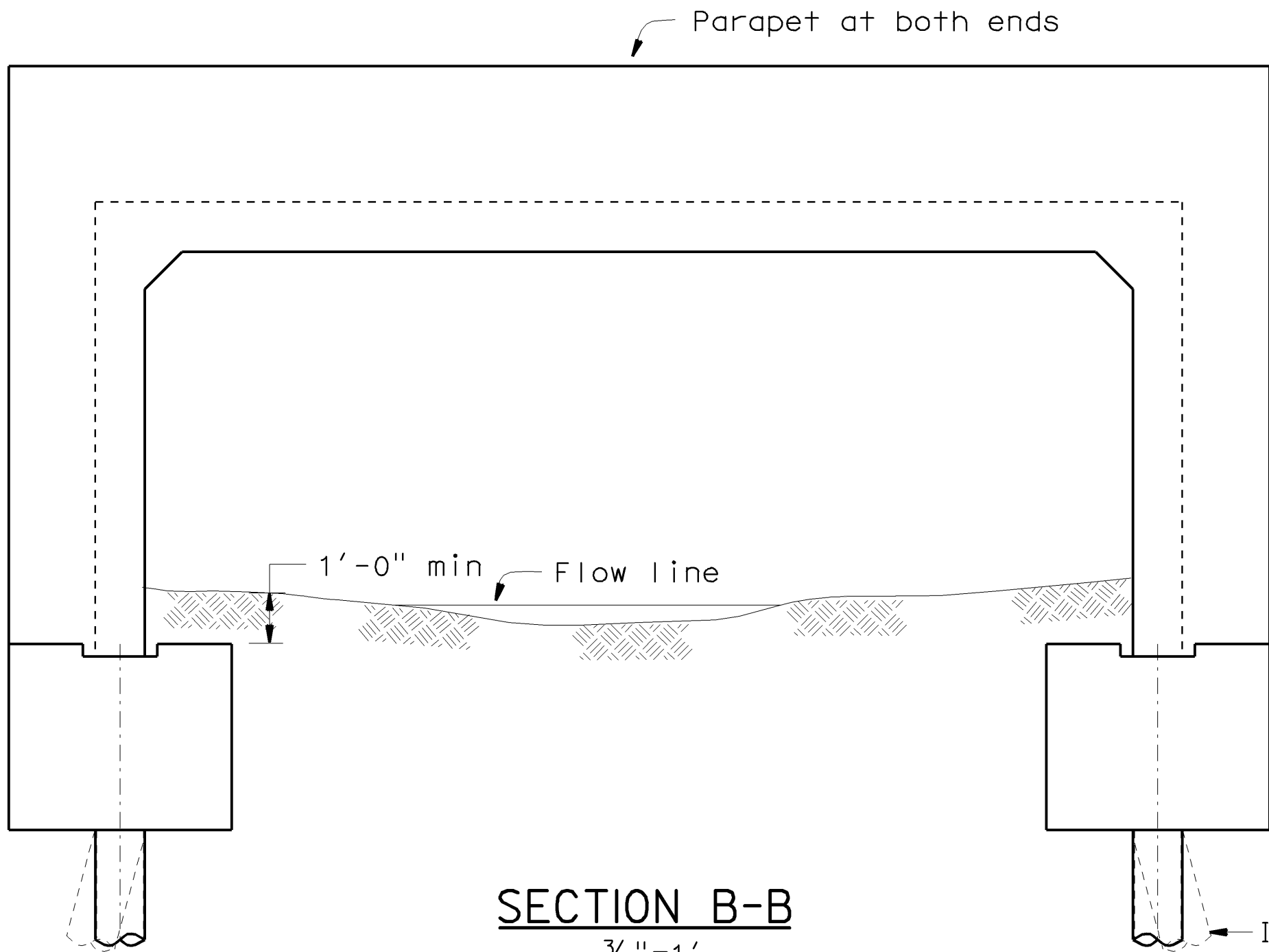
If piles are required, it is optional to stagger battered piles not more than 15°



PLAN VIEW OF RIGID FRAME



SECTION A-A



SECTION B-B

No piles required if foundation is on bed rock

STANDARD DRAWING				STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.	CULVERT - CAST IN PLACE BOTTOMLESS			
FILE NO. xs17-050-2e	APPROVED BY <i>D FORESTER</i> RESPONSIBLE TECHNICAL SPECIALIST	RELEASED BY <i>ROBERTO LACALLE</i> RESPONSIBLE OFFICE CHIEF	POST MILE			GENERAL CONFIGURATION				
	APPROVAL DATE 6-27-08	RELEASE DATE 6-27-08								
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS						CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 2	OF 4

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